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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/588,084

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Masahiko Samukawa

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OLIFF & BERRIDGE, PLC

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EXAMINER

JOLLEY, KIRSTEN

ART UNIT

PAPER NUMBER

1715

NOTIFICATION DATE

DELIVERY MODE

09/01/2011

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

OfficeAction25944@oliff.com

jarmstrong@oliff.com

Office Action Summary	Application No. 10/588,084	Applicant(s) SAMUKAWA ET AL.	
	Examiner KIRSTEN JOLLEY	Art Unit 1715	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1 and 3-21 is/are pending in the application.
- 5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1 and 3-20 is/are rejected.
- 8) ☒ Claim(s) 21 is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/22/11</u> . | 6) <input type="checkbox"/> Other: ____. |

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed June 22, 2011 have been fully considered but they are not persuasive.

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Applicant argues that Blackburn does not disclose the technique of dripping the coating liquid in the ring shape in the vicinity of the outer circumference of the substrate. While the Examiner acknowledges that Blackburn et al. does not specifically recite this step, it would have been obvious to one having ordinary skill in the art because otherwise part of the periphery would be left uncoated, which is undesirable in this uniform coating method. Applicant also argues that Blackburn neither discloses nor suggests the case that the coating liquid having high viscosity is dripped in the spiral shape on the lens. However the Examiner notes that Beltz et al. is cited and applied for this conventional coating technique.

With respect to the Beltz et al. reference, Applicant argues that Beltz does not describe the technique of dripping the coating liquid in the ring shape in the vicinity of the outer circumference of the wafer. However, the Examiner maintains that it would have been obvious to one having ordinary skill in the art to have first coated in a ring shape around the periphery as part of the spiral coating technique, as similarly argued with respect to Blackburn et al., because otherwise part of the periphery would be left uncoated, which would be undesirable in this uniform coating method.

Applicant also argues that Beltz neither discloses nor suggests the case that the coating liquid having high viscosity is dripped in the spiral shape. The Examiner disagrees. Beltz et al. teaches dispensing coating liquid as a continuous spiral bead in col. 3, lines 10-11.

Applicant argues that the Examiner uses impermissible hindsight reasoning. In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account

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only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). The references of Blackburn et al. and Beltz et al. are analogous art, similarly related to the field of spiral spin coating on a substrate.

Applicant states that even if Blackburn disclosed the claimed combination of ring and spiral coating, the object of the Beltz reference is to maintain the constant spiral beat volume, and the object of controlling the rotational speed of the body to be coated is different between the claim features and the technique of Beltz. While the Examiner acknowledges that the object of the instant invention and that of Beltz may be different, the claims as currently written broadly read on the combination of Blackburn et al. and Beltz et al. as set forth below.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn et al. (US 6,352,747) in view of Beltz et al. (US 4,451,507).

With respect to claims 1, 4, 9, and 20, Blackburn et al. discloses a method of coating a photochromic lens (abstract) comprising: dripping the coating liquid in a vicinity of an outer circumference on the coating surface of the lens; thereafter dripping the coating liquid in a spiral

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shape toward a geometrical/optical center of the lens (col. 3, lines 35-39); and thereafter smoothing the coating liquid on the coating surface with a high speed spinning step (col. 3, lines 21-23); wherein the nozzle is positioned so as to be vertically ascendable/descendable and horizontally moveable in a diameter direction (col. 8, lines 48-51). The coating film has a photochromic function. While the Examiner notes that Blackburn et al. only specifically teaches a spiral coating step, it would have been obvious to a design engineer having ordinary skill in the art to have started the spiral shape by first coating around the entire periphery of the substrate, thus forming a ring shape around the periphery, because otherwise part of the periphery would be left uncoated, which is undesirable in this uniform coating method. It is further noted that Blackburn et al. teaches the lens substrate has a convex curved surface in col. 7, lines 54-65.

Blackburn et al. teaches coating spirally from the outer periphery of the substrate towards the center, however the reference lacks a teaching of varying the spin speed of the substrate during coating/dripping. Beltz et al. is cited for its teachings that it is desirable when coating a substrate spirally to vary the spin speed of the substrate so that the liquid is dispensed as a continuous spiral bead at a substantially constant volume per square (col. 3, lines 5-11). Beltz et al. teaches that, as the dispenser moves from the center of the wafer towards the periphery, the surface spin rate must decrease at a rate of $1/R$ where R is the radial position of the arm over the wafer (col. 8, lines 54-64), as illustrated by Figure 6. While Beltz et al. is directed to a method of coating from the center towards the periphery, similar principles would apply in a reversed method of coating from the periphery towards the center, i.e., the surface spin rate must *increase* at a rate of $1/R$ in order to maintain the constant spiral bead volume per square dimension. It would have been obvious for one having ordinary skill in the art to have incorporated the surface

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spin speed variation taught by Beltz et al. into the process of Blackburn et al. with the expectation of improved coating uniformity, resulting in meeting the limitation of setting a rotational speed of the object at a time of dripping in the ring shape (at the outer periphery) to be a smaller value than a rotational speed of the object at a time of dripping the coating liquid in the spiral shape.

Further, as to claim 20, Blackburn et al. does not teach waiting for the coating liquid to spread over the coating surface prior to the second spinning/"smoothing" step. Beltz et al. teaches use of a pause in the rotation of the wafer at the end of the dispense step, and before high speed spinning/smoothing, for a "heal" period which allows the coating to deform to a flat shape, as illustrated in Figure 9 (col. 11, lines 1-22). It would have been obvious for one having ordinary skill in the art to have similarly incorporated a heal/waiting period after dispensing and before smoothing in the process of Blackburn et al. in order to allow time for the coating to deform to a flat shape from its applied semicircular shape thus improving uniformity.

As to claim 5, the coating surface of the lens in Blackburn et al. has a convex curved shape.

As to claims 3 and 6-8, Blackburn et al. lacks a teaching of the coating liquid's viscosity. It would have been obvious for one having ordinary skill in the art to have determined the optimum viscosity through routine experimentation depending upon the particular coating material to be applied, its desired thickness, and based on the spin coating process parameters, etc., in the absence of a showing of criticality.

As to claims 10-14, it is the Examiner's position that an engineer skilled in the art would have adjusted the positioning and movement of the nozzle, as well as rotational speed, based on

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the shape data of the lens, including its diameter and surface curve since Blackburn et al. teaches that its process may be used to coat lenses having a low or high base curvature (col. 7, lines 64-65), and the coating results would necessarily vary for different shapes/lens curvatures.

As to claim 15, the Examiner notes that it is well known in the spin coating art to adjust the pressure for dripping the coating liquid based on the temperature of the coating liquid so that flow rate is constant because the temperature of the coating liquid affects its viscosity, and the viscosity likewise then affects the pressure required to expel the drips from the nozzle. It would have been obvious for one having ordinary skill in the art to have adjusted the pressure to maintain constant flow rate, for the above reasons and further because Beltz et al. teaches the criticality of depositing a constant volume of coating solution onto the rotating substrate per square dimension.

As to claim 16, Blackburn et al. teaches a step of smoothing the applied coating liquid by spinning the lens in col. 3, lines 21-23.

As to claims 17-19, while Blackburn et al. does not teach use of a plurality of smoothing steps, the Examiner notes that it is well known in the spin coating art to determine the optimum amount of spinning that results in smoothing and leveling of a coating through routine experimentation depending upon the particular coating material used, substrate used, length and speed of rotation, the topography of the substrate, etc., in the absence of a showing of criticality.

Allowable Subject Matter

4. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and

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any intervening claims. The prior art does not teach or fairly suggest the claimed coating method of claim 1 whereby the rotational speed of the object when coating in the ring shape is set to be smaller than a rotational speed of the object when coating in the spiral shape, and whereby the rotational speed is constant when coating in the ring shape and is constant when coating in the spiral shape.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to KIRSTEN JOLLEY whose telephone number is (571)272-1421. The examiner can normally be reached on Monday to Tuesday and Thursday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kirsten C Jolley/
Primary Examiner, Art Unit 1715

kcj